P1

BRUHATH BANGALORE MAHANAGARA PALIKE
Byatarayanapura Division

Name of the work: Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division.

First and Part Bill
Total Abstract

TEJUS
CONSULTANTS

No. TC / BBMP / RI / BYT-PMC / 350 / 17 – 18

Date: 20/12/18

To
The Executive Engineer
Byatarayanapura Division,
Bruhat Bangalore Mahanagara Palike,
Bangalore.

Dear Sir

Sub: **Package No.01 (Package consists of 18 works).**

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **First RA bill** submitted by Sri D Narahari, Bangalore, towards the above said work and arrived at an amount of **Rs. 40071632.27/-(Rupees Rupees Four Crore Seventy One Thousand Six Hundred Thirty Two and Paise Twenty Seven Only**). The work has been completed satisfactorily.

This is for your kind information.

Thank you and assuring you the best of our Services at all the times

20/12/18

For Tejus Consultants
(Nischal M)

TEJUS CONSULTANTS

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CONSULTANTS

TEST REPORT					
Clients	Bruhath Bangalore Mahanagara Palike				
Project	Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore				
Contractor	Benaka developers and project pvt ltd				
Total Weight in gm:	3000				
SIEVE ANALYSIS					
Type of Material	40 mm down size			**Proposed Use**	PCC
Sample Location	At Site/Plant			**Date of Sampling**	10.4.2018
				Date of Testing	10.4.2018
IS Sieve Size	**Weight Retained in gm**	**Cum. Weight Retained in gm**	**Cumulative Weight Retained in %**	**Cumulative Weight Passing in %**	**Specific Limits as per IS 383-1970 (RA-2007)**
					% of Passing For Graded Aggregate of Nominal Size
80.00mm	**0**	**0**	**0.00**	100.00	100
63.00mm	**0**	**0**	**0.00**	100.00	-
40.00mm	**250**	**250**	**8.33**	91.67	95-100
20.00mm	**1225**	**1475**	**49.17**	50.83	30-70
10.00mm	**942**	**2417**	**80.57**	19.43	10-35
4.75mm	**452**	**2869**	**95.63**	4.37	0-5
Pan	**131**	**3000**	**100.00**	0.00	
Remarks :	✓ Satisfactory / Not Satisfactory				

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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TEST REPORT	
Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka developers and project pvt ltd

SPECIFIC GRAVITY AND WATER ABSORPTION AGGREGATE (IS-2386-PART-3) — **FINE**

Type of Material	Fine aggregate (River Sand/ M sand)	**Proposed Use**	concrete
Location/Source	At Site/Plant	**Date of Sampling**	10.4.2018
Period of Soaking	24 hours	**Date of Testing**	10.4.2018

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	658	662	642	
B	Weight of oven - dry sample gm.	650	651	632	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1690	1692	1680	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.675	2.657	2.667	**2.666**
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.231	1.690	1.582	**1.501**

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka developers and project pvt ltd

SIEVE ANALYSIS

Total Weight (gm)	3000	**Proposed Use**	concrete
Type of Material	Fine aggregate (River Sand/ M sand)	**Date of Sampling**	10.4.2018
Sample Location	At Site/Plant	**Date of Testing**	10.4.2018

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	221	221	7.37	92.63	90 - 100
2.36 mm	310	531	17.70	82.30	75 - 100
1.18 mm	412	943	31.43	68.57	55 - 90
0.600 mm	486	1429	47.63	52.37	35 -59
0.300 mm	720	2149	71.63	28.37	8-30
0.150 mm	624	2773	92.43	7.57	0 - 10
Pan	227	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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Test Report on Cement	
Project	Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike.
Consultant	TEJUS CONSULTANTS.
Contractor	Benaka developers and project pvt ltd
Sample ID	Cement
Date of Sample Tested	10.4.2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	38 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	339 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	3mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	27.00%	25 % to 35

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CONSULTANTS & TESTING CENTER

Highway / Building Material Testing | Structural Strengthening Solutions
Quality Control / Assurance / Audit | Proof Checking (Structural Designs & Drawings)
Soil Stabilization and Shoring Services | Non - Destructive Testing

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTCP/BD/QC/2018-19 Date: 10.04.2018

TEST RESULTS OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Client : **Bruhat Bangalore Mahanagar Palike**
Agency : **Benaka Developers & Project Pvt.Ltd.**
Name of Work : Package No.01 (Package consists of 18 works)
Sample Identification : 8mm, 10mm, 12mm TMT Bars
Technical Reference : IS 1786:2008, IS 1608:2005, IS 1599:1985 (Reaffirmed 2006)
Date of test: : 10.04.2018

Sl.No	Nominal size (dia in mm)	Mass per metre (kg/metre)	TENSILE STRENGTH		
			0.20 % proof stress/ yield stress ($N/mm^{2)}$	Tensile strength ($N/mm^{2)}$	Elongation, percent on gauge length
1	8	0.396	522	569	18
2	10	0.620	549	586	19
3	12	0.889	559	593	20

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For Civil Experts
Authorised Signature

174, Sri Ranga Complex, Amrutha Nagar Main Road, New Bank Colony, Konanakunte, Bangalore - 560 062.
Mobile : +91 97429 59595 | Tel/Fax : 080 2632 2565 | Email : civilexpertsltd@gmail.com | URL : www.civilexperts.co.in

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Test Report on Cement

Project	Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka developers and project pvt ltd
Sample ID	Cement
Date of Sample Tested	18.04.2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	36 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	348 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	2mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	25 % to 35

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	**Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division**
Client :	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant :	**M/s Tejus Consultants**
Contractor:	**Benaka Developers and Project Pvt. Ltd.**

Type of Material	BC	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**31.05.2018**
		Date of Testing	**31.05.2018**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	625	73	552	60
16.0	12.5	1200	112	1088	81
12.5	10.0	500	72	428	58
10.0	6.3	500	56	444	46
Total		**2825**	**313**	**2512**	**245**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	11.08	
Elongation Index(%):	9.75	
Combined FI+EL (%)	20.83	

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GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Name of Work	:	**Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers and Project Pvt. Ltd.
Date of Testing	:	31.05.2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	31.05.2018
Type of material & Purpose:	BC	Date of testing:	31.05.2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	138	138.0	11.50	88.50	79 - 100
9.50	106	244.0	20.33	79.67	71 - 95
4.75	220	464.0	38.67	61.33	53 - 71
2.360	124	588.0	49.00	51.00	42 - 58
1.180	120	708.0	59.00	41.00	34 - 48
0.600	102	810.0	67.50	32.50	26 - 38
0.300	110	920.0	76.67	23.33	18 - 28
0.150	86	1006.0	83.83	16.17	12 - 20
0.075	94	1100.0	91.67	8.33	4 - 10
Pan	100.0				
Total	1200.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Providing Cement Concrete Road and RCC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers and Project Pvt. Ltd.
Date of Testing :	01.06.2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	920
2. Weight of Mixture after extraction, g	900	872
3. Weight of Bitumen	50	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.40	1.70
7. Weight of Bitumen & fines	51.40	49.70
8. Bitumen content in %	5.41	5.40
9. Average Bitumen content in %	**5.41**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	01.06.2018
Type of material & Purpose:	**BC**	Date of testing:	01.06.2018
		Oven Dry Wt.(gms):	900.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	91	91.0	10.11	89.89	79 - 100
9.50	117	208.0	23.11	76.89	71 - 95
4.75	132	340.0	37.78	62.22	53 - 71
2.360	118	458.0	50.89	49.11	42 - 58
1.180	105	563.0	62.56	37.44	34 - 48
0.600	70	633.0	70.33	29.67	26 - 38
0.300	76	709.0	78.78	21.22	18 - 28
0.150	56	765.0	85.00	15.00	12 - 20
0.075	70	835.0	92.78	7.22	4 - 10
Pan	65.0				
Total	900.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Providing Cement Concrete Road and ROC Drains at Byaraveshwara Layout (near Pruthvi Theator) in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers and Project Pvt. Ltd.
Date of Testing :	01.06.2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.800	0.780	0.810
Final weight of plate after application of tack Coat (c)	Kg	0.823	0.803	0.833
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.250	0.256	0.251
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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BRUHATH BANGALORE MAHANAGARA PALIKE
Byatarayanapura Division

Name of the work: Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division.

First and Part Bill
Test Reports

TEJUS
CONSULTANTS

Test Report on Cement

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Sample ID	Cement
Date of Sample Tested	05.05.2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	36 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	348 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	2mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	25 % to 35

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka developers and project pvt ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	**Proposed Use**	PCC
Location/Source	At Site/Plant	**Date of Sampling**	05.05.2018
Period of Soaking	24 hours	**Date of Testing**	05.05.2018

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	648	678	658	
B	Weight of oven - dry sample gm.	641	670	648	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1682	1701	1690	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.660	2.659	2.667	2.662
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.092	1.194	1.543	1.276

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ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

Authorised Signatory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka developers and project pvt ltd

SIEVE ANALYSIS

Total Weight:	**3000** gms		
Type of Material	**Fine aggregate (River Sand/ M sand)**	**Proposed Use**	concrete
Sample Location	At Site/Plant	**Date of Sampling**	05.05.2018
		Date of Testing	05.05.2018

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	**100**
4.75 mm	210	210	7.00	93.00	**90 - 100**
2.36 mm	306	516	17.20	82.80	**75 - 100**
1.18 mm	422	938	31.27	68.73	**55 - 90**
0.600 mm	486	1424	47.47	52.53	**35 -59**
0.300 mm	710	2134	71.13	28.87	**8-30**
0.150 mm	632	2766	92.20	7.80	**0 - 10**
Pan	234	3000			**-**

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka Developers and Project Pvt. Ltd.
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size			**Proposed Use**	PCC
Sample Location	At Site/Plant			**Date of Sampling**	05.05.2018
				Date of Testing	05.05.2018

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	**0**	**0**	**0.00**	100.00	100
63.00mm	**0**	**0**	**0.00**	100.00	-
40.00mm	**250**	**250**	**8.33**	91.67	95-100
20.00mm	**1225**	**1475**	**49.17**	50.83	30-70
10.00mm	**942**	**2417**	**80.57**	19.43	10-35
4.75mm	**452**	**2869**	**95.63**	4.37	0-5
Pan	**131**	**3000**	**100.00**	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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Test Report on Cement

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Sample ID	Cement
Date of Sample Tested	14.05.2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	36 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	348 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	2mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	28.00%	25 % to 35

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka developers and project pvt ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	**Proposed Use**	concrete
Location/Source	At Site/Plant	**Date of Sampling**	14.05.2018
Period of Soaking	24 hours	**Date of Testing**	14.05.2018

Sl. No.	Test Property		TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.		648	678	658	
B	Weight of oven - dry sample gm.		641	670	648	
C	Weight of Pycnometer Filled with water gm		1275	1275	1275	
D	Weight of Pycnometer + sample + water gm		1682	1701	1690	
E	Bulk specific gravity	B / (C + A - D)	2.660	2.659	2.667	**2.662**
G	Absorption (%)	(A - B) *100 / B	1.092	1.194	1.543	**1.276**

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka developers and project pvt ltd

SIEVE ANALYSIS

Total Weight:	**3000** gms				
Type of Material	**Fine aggregate (River Sand/ M sand)**		**Proposed Use**	concrete	
Sample Location	At Site/Plant		**Date of Sampling**	14.05.2018	
			Date of Testing	14.05.2018	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing (Zone-II)**
10.00 mm	0	0	0	100.00	**100**
4.75 mm	210	210	7.00	93.00	**90 - 100**
2.36 mm	306	516	17.20	82.80	**75 - 100**
1.18 mm	422	938	31.27	68.73	**55 - 90**
0.600 mm	486	1424	47.47	52.53	**35 -59**
0.300 mm	710	2134	71.13	28.87	**8-30**
0.150 mm	632	2766	92.20	7.80	**0 - 10**
Pan	234	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	Benaka Developers and Project Pvt. Ltd.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	Plant/At site	**Date of Sampling**	14.05.2018
		Date of Testing	14.05.2018

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	266	266	2.66	97.34	95 - 100
10.00 mm	4830	5096	50.96	49.04	25 - 55
4.75 mm	4226	9322	93.22	6.78	0 - 10
Pan	678	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Consultants	TEJUS CONSULTANTS	
Contractor	Benaka Developers and Project Pvt. Ltd.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	**12.5 mm down size**	**Proposed Use**	Concrete
Sample Location	At Site/Plant	**Date of Sampling**	14.05.2018
		Date of Testing	14.05.2018

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	**100**
12.5	546	546	5.46	94.54	**90-100**
10.0	4682	5228	52.28	47.72	**40-85**
4.75	4522	9750	97.50	2.50	**0-10**
Pan	250	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	14.05.2018	21.05.2018	7 days	8.122	22500	280	12.44	12.52
2	14.05.2018	21.05.2018	7 days	8.128	22500	282	12.53	
3	14.05.2018	21.05.2018	7 days	8.137	22500	283	12.58	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	14.05.2018	11.06.2018	28 days	8.130	22500	450	20.00	20.09
2	14.05.2018	11.06.2018	28 days	8.138	22500	452	20.09	
3	14.05.2018	11.06.2018	28 days	8.146	22500	454	20.18	

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PRECAST SLAB (CORE) TEST REPORT		
Client	:	Bruhat Bangalore Mahanagara Palike
Contractor	:	Benaka Developers and Project Pvt. Ltd.
Name of Work	:	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division.
No.of Sample Tested	:	3
Date of Testing	:	04.06.2018
Techinical Reference	:	**IS:516-1959 (Reaffirmed 1999), SP-24:1983.**
Grade of Concrete	:	M_{20} . 100mm thick

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50	90	0.43	2433.3	1.80	0.96	37.35	19.022	20.544	19.722	24.653
2	50	90	0.435	2461.6	1.80	0.96	36.58	18.630	20.120	19.316	24.145
3	50	90	0.438	2478.57	1.80	0.96	37.62	19.160	20.692	19.865	24.831

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TEJUS CONSULTANTS
No. 58, 3rd main, 6th Cross, 1st Stage KHB Colony, Basaveshwaranagar, Bangalore - 560079, O : +91 80 23287532, tejusconsultants@gmail.com

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Benaka Developers and Project Pvt. Ltd.

Type of Material	WMM	**Proposed Use**	WMM
Sample Location	At plant	**Date of Sampling**	11.06.2018
		Date of Testing	11.06.2018

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	850	75	775	50
16.0	12.5	1200	115	1085	120
12.5	10.0	450	76	374	62
10.0	6.3	500	65	435	38
Total		**3000**	**331**	**2669**	**270**

Note: Minimum 200 Pcs should be taken on each fraction of test

	Flakiness Index(%):	11.03
	Elongation Index(%):	10.12
	Combined FI+EL (%)	21.15

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GRADATION FOR WMM
(As per MORT&H 400-11)

Name of Work	:	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers and Project Pvt. Ltd.
Date of Testing	:	11.06.2018
Type of Mix	:	WMM
Sample I/D	:	WMM 1

Sample Location:	At plant	**Date of Sampling:**	11.06.2018
Type of material & Purpose:	WMM	**Date of testing:**	11.06.2018
		Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained (gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	615	615	6.15	93.85	95-100
22.4	2520	3135	31.35	68.65	60-80
11.2	1782	4917	49.17	50.83	40-60
4.75	1452	6369	63.69	36.31	25-40
2.36	1354	7723	77.23	22.77	15-30
0.6	862	8585	85.85	14.15	8.0-22.0
0.075	842	9427	94.27	5.73	0-8
Pan	573				
Total	10000				

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

TEJUS CONSULTANTS

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	M/s Tejus Consultants		
Contractor	Benaka Developers and Project Pvt. Ltd.		
Proposed Use	WMM	**Date of Sampling**	**11.06.2018**
Sample Location	**At plant**	**Date of Testing**	**11.06.2018**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	352.00	348.00	350.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	270.00	278.00	275.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	70.00	75.00	
4	Aggregate Impact Value (%)	(Wc/Wa)* 100	23.30	20.11	21.43	
5	Average Aggregate impact value	(%)	21.61			Max - 30 %

Remarks : ✓ Satisfactory / Not Satisfactory

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GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Name of Work	:	**Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Benaka Developers and Project Pvt. Ltd.
Date of Testing	:	19.06.2018
Type of Mix	:	BC
Sample I/D	:	BC3

Sample Location:	At plant	Date of Sampling:	19.06.2018
Type of material & Purpose:	BC	Date of testing:	19.06.2018
		Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	138	138.0	11.50	88.50	79 - 100
9.50	106	244.0	20.33	79.67	71 - 95
4.75	220	464.0	38.67	61.33	53 - 71
2.360	124	588.0	49.00	51.00	42 - 58
1.180	120	708.0	59.00	41.00	34 - 48
0.600	102	810.0	67.50	32.50	26 - 38
0.300	110	920.0	76.67	23.33	18 - 28
0.150	86	1006.0	83.83	16.17	12 - 20
0.075	94	1100.0	91.67	8.33	4 - 10
Pan	100.0				
Total	1200.0				

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers and Project Pvt. Ltd.
Date of Testing :	20.06.2018
Type of Mix :	BC
Sample I/D :	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	920
2. Weight of Mixture after extraction, g	900	872
3. Weight of Bitumen	50	48
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.40	1.70
7. Weight of Bitumen & fines	51.40	49.70
8. Bitumen content in %	5.41	5.40
9. Average Bitumen content in %	**5.41**	
10. Minimum Bitumen content in %	**5.40**	

GRADATION FOR BC AFTER EXTRACTION
(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	20.06.2018
Type of material & Purpose:	**BC**	Date of testing:	20.06.2018
		Oven Dry Wt.(gms):	900.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	91	91.0	10.11	89.89	79 - 100
9.50	117	208.0	23.11	76.89	71 - 95
4.75	132	340.0	37.78	62.22	53 - 71
2.360	118	458.0	50.89	49.11	42 - 58
1.180	105	563.0	62.56	37.44	34 - 48
0.600	70	633.0	70.33	29.67	26 - 38
0.300	76	709.0	78.78	21.22	18 - 28
0.150	56	765.0	85.00	15.00	12 - 20
0.075	70	835.0	92.78	7.22	4 - 10
Pan	65.0				
Total	900.0				

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	M/s Tejus Consultants
Contractor :	Benaka Developers and Project Pvt. Ltd.
Date of Testing :	20.06.2018
Type of Mix :	Tack coat
Sample I/D :	1

Determination	Unit	Test No		
		1	2	3
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.800	0.780	0.810
Final weight of plate after application of tack Coat (c)	Kg	0.823	0.803	0.833
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.250	0.256	0.251
Average	Kg/sq.m	0.252		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Test Report on Cement

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Sample ID	Cement
Date of Sample Tested	22.06.2018
Sample Supplied By	Agency

Sl.No.	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 12269-1987
1	a) Initial Setting Time	IS-4031 (Part-5)	34 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part-5)	340 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part-3) By the Le-Chatelier method	3mm	Not More than 10 mm
3	Standard Consistency	IS-4031 (Part-4)	26.00%	25 % to 35

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	Benaka developers and project pvt ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	Fine aggregate (River Sand/ M sand)	**Proposed Use**	concrete
Location/Source	At Site/Plant	**Date of Sampling**	22.06.2018
Period of Soaking	24 hours	**Date of Testing**	22.06.2018

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	648	678	658	
B	Weight of oven - dry sample gm.	641	670	648	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1682	1701	1690	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.660	2.659	2.667	**2.662**
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.092	1.194	1.543	**1.276**

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Consultants	Tejus Consultants, Bangalore
Contractor	Benaka developers and project pvt ltd

SIEVE ANALYSIS

Total Weight:	**3000** gms		
Type of Material	**Fine aggregate (River Sand/ M sand)**	**Proposed Use**	concrete
Sample Location	At Site/Plant	**Date of Sampling**	22.06.2018
		Date of Testing	22.06.2018

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	**100**
4.75 mm	208	208	6.93	93.07	**90 - 100**
2.36 mm	302	510	17.00	83.00	**75 - 100**
1.18 mm	402	912	30.40	69.60	**55 - 90**
0.600 mm	482	1394	46.47	53.53	**35 -59**
0.300 mm	760	2154	71.80	28.20	**8-30**
0.150 mm	638	2792	93.07	6.93	**0 - 10**
Pan	208	3000			**-**

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike				
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore				
Contractor	Benaka Developers and Project Pvt. Ltd.				
Total Weight:	10000	gms			

SIEVE ANALYSIS

Type of Material	20 mm down size		**Proposed Use**	Concrete	
Sample Location	Plant/At site		**Date of Sampling**	22.06.2018	
			Date of Testing	22.06.2018	

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	252	252	2.52	97.48	95 - 100
10.00 mm	4832	5084	50.84	49.16	25 - 55
4.75 mm	4210	9294	92.94	7.06	0 - 10
Pan	706	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division	
Consultants	TEJUS CONSULTANTS	
Contractor	Benaka Developers and Project Pvt. Ltd.	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	**12.5 mm down size**	**Proposed Use**	CONCRETE
Sample Location	At Site/Plant	**Date of Sampling**	22.06.2018
		Date of Testing	22.06.2018

IS Sieve Size (in mm)	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
20.0	0	0	0	100	100
12.5	556	556	5.56	94.44	90-100
10.0	4672	5228	52.28	47.72	40-85
4.75	4532	9760	97.60	2.40	0-10
Pan	240	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	22.06.2018	29.06.2018	7 days	8.122	22500	408	18.13	18.10
2	22.06.2018	29.06.2018	7 days	8.146	22500	405	18.00	
3	22.06.2018	29.06.2018	7 days	8.142	22500	409	18.18	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvement to Drains and Asphalting to Roads at Manjunatha Layout 1st , 2nd,3rd and 4th Cross in Ward No.06(Thanisandra), Byatarayanapura Sub Division
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	Benaka Developers and Project Pvt. Ltd.
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	22.06.2018	20.07.2018	28 days	8.136	22500	675	30.00	30.06
2	22.06.2018	20.07.2018	28 days	8.142	22500	676	30.04	
3	22.06.2018	20.07.2018	28 days	8.148	22500	678	30.13	

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